

C.X. Furtado (1897–1980): Contributions to the Study of Palms

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Abstract

An account of Caetano Xavier dos Remedios Furtado's academic career, his taxonomic work on Malayan palms and the African genus *Hyphaene* is given, together with a complete list of his publications on palms and a resumé of his travels in connection with his research on palms.

Introduction

Caetano Xavier dos Remedios Furtado was born in Goa, India, 14 October 1897. He attended the Poona Agricultural College in India and while an undergraduate began to write technical articles, especially on the coconut palm. The first article was published in 1919. After completing his B.Sc. degree in 1921, Furtado obtained employment as an agronomist in Burma where he continued his interest in coconuts. He joined the staff of the Singapore Botanic Gardens in 1923 and within a few years began a lengthy study of Malayan palms. Primarily on the basis of his publications on palm research in the 1930s, Furtado was awarded a D.Sc. degree from the University of Bombay in 1939. His thesis not only gave an account of these researches but also highlighted the number of languages he mastered to tackle palm taxonomy and also his interest in botanical nomenclature (Appendix 3). Dr Furtado retired in 1952 but was re-employed as Botanist until 1964 (Kiew, 1999). Even after this second retirement, he continued to conduct research and to publish botanical articles for nearly another decade, his last publication appearing in 1970.

Because his professional achievements in life and at his death were overshadowed by the works of more eminent scientists, Furtado has not been given the recognition he deserves as a botanist and palm specialist.

Furtado worked closely with E.J.H. Corner and R.E. Holttum when they were Assistant Director and Director of the Singapore Botanic Gardens. All three continued to work at the Gardens during World War II in the period of Japanese military occupation of Singapore, during which time Furtado was responsible for the administration of the Gardens. The



Figure 1. Caetano Xavier dos Remedios Furtado.

work of these two British botanists has tended to obscure Furtado's botanical research and publication.

At the time of his death on 13 June 1980, Furtado's research and writing on palms went almost unacknowledged because so much attention was drawn to the death, four months earlier, of the preeminent world palm expert H.E. Moore, Jr. Only two brief obituaries were published about Furtado (Alphonso, 1980; Holttum and Dransfield, 1981) neither was detailed nor provided a listing of his palm publications. A short informative entry on Furtado appears in the *Cyclopedia of Collectors* (Steenis-Kruseman, 1950).

Furtado's Contribution to the Study of Palms

This article seeks to document the contributions C.X. Furtado made to the study of palms, especially to Malayan palms and the African genus *Hyphaene*. In addition to his work on palms, Furtado is known for his contributions to nomenclature and Araceae systematics.

Appendix I provides full citations of Furtado's 42 publications on palms that could be located. The listing is believed to be complete, but it was not possible to gain access to Furtado's personal professional papers to be certain. As the listing shows, Furtado's early interest in the coconut palm accounts for 11 publications from 1919 to 1927.

C.X. Furtado's most significant palm research centred on an extensive study of Malayan palms, which produced a series of 19 articles published between 1934 and 1956. In retirement, Furtado embarked on a herbarium study of the mostly African genus *Hyphaene* resulting in five articles.

Four new palm genera were erected by Furtado: *Cornera*, *Liberbaileya*, *Maxburretia*, and *Schizospatha*. Subsequently, *Cornera* and *Schizospatha* were reduced to synonymy with *Calamus* and *Liberbaileya* combined with *Maxburretia*.

On the basis of a computer search of *Index Kewensis*, Furtado described 104 palm species, mostly in the genera *Calamus*, *Daemonorops*, *Hyphaene*, *Licuala* and *Pinanga*. Comparing the species Furtado described with the February 1997 listing of palms provided by the World Conservation Monitoring Centre, Cambridge, 53 species names remain valid. However, further species names could be reduced to synonymy, especially in *Hyphaene*, which is in need of revision.

A last and most appropriate recognition of Furtado's palm research is to be found in the binomials *Maxburretia furtadoana* J.Dransf. and *Korthalsia furtadoana* J.Dransf. The first was named "in recognition of his great contribution to our understanding of Malayan palms" (Dransfield,

1978); the second to recognize the herbarium research Furtado carried out on that genus (Dransfield, 1981).

C.X. Furtado's palm research extended over a period of more than a half-century. As documented here, Furtado's record of achievement represents a major contribution to the scientific knowledge about the important palm family.

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Appendix I. C.X. Furtado: Publications on Palms

(GBSS Gardens' Bulletin Straits Settlements; GBS Gardens' Bulletin Singapore)

1919. Some tillage and labour problems of the coconut planter of Western India. *The Poona Agricultural College Magazine*. **11**(2): 105–107.
1920. *Oryctes rhinoceros*, a coleopteron injurious to the coconut palm in Goa, Portuguese India. *Boletim de Agricultura Nova Goa*. **2**(1/4): 82–85.
1920. Abnormal inflorescences. (of coconut palm) *Poona Agricultural College Magazine*. **12**(2): 81–83. (co-authored with P.C. Barreto)
1922. Vegetative reproduction in cocoanuts (sic). *Poona Agricultural College Magazine*. **15**(3): 144–146. (author listed in error as C.H. Furtado)
1923. Coconut tapering disease. *Tropical Agriculturist*. **61**(2): 126. (letter to editor)
1923. The coconut inflorescence. *Poona Agricultural College Magazine*. **14**(4): 213–221.
1923. Ripening of coconut flowers. *The Agricultural Journal of India*. **18**(5): 561. (letter to editor)
1924. Ripening of coconut flowers. *Poona Agricultural College Magazine*. **15**(4): 240.
1924. A study of the coconut flower and its relation to fruit production. *GBSS*. **3**: 261–274.
1924. Branched coconut palms and their fertility. *GBSS*. **3**: 274–279.
1927. Teratological notes. A. Abnormalities in coconut palms. B. *Ananas sativa*. *GBSS*. **4**: 78–86.
1933. The limits of the genus *Areca* Linn. and its sections. *Feddes Repertorium*. **33**(8–17): 217–239.
1934. Palmae Malesicae (I. Species of *Iguanura* and *Pinanga*). *Feddes Repertorium*. **35**(18–25): 273–283.
1935. Palmae Malesicae II. *Nenga Wendlandiana* Scheff. or *Nenga pumila* (Mart.) Wendl? *GBSS*. **8**: 159–163.

1935. Palmae Malesicae III. Notes on some Malaysian Calami. *GBSS*. **8**: 241–261.
1935. Palmae Malesicae IV. Rattans described in Blanco's Flora de Filipinas. *GBSS*. **8**: 321–338.
1935. Palmae Malesicae V. Notes on some Malayan *Daemonorops*. *GBSS*. **8**: 339–367.
1937. Palmae Malesicae VI. Notes on some *Daemonorops* of the section *Cymbospathae*. *GBSS*. **9**: 152–181.
1937. Palmae Malesicae VII. Two new Calami from the Buitenzorg Gardens. *GBSS*. **9**: 182–186.
1939. *Contributions to the Systematics of the Malaysian Palms*. D.Sc. thesis (Agriculture) Botany, University of Bombay.
1940. Palmae Malesicae VIII. The genus *Licuala* in the Malay Peninsula. *GBSS*. **11**: 31–73.
1941. Palmae Malesicae IX. Two new Coryphaceous genera in Malaya. *GBSS*. **11**: 236–243.
1949. Palmae Malesicae X. The Malayan species of *Salacca*. *GBS*. **12**: 378–403.
1951. Palmae Malesicae XI. The Malayan species of *Korthalsia*. *GBS*. **13**: 300–324.
1951. Palmae Malesicae XII. The Malayan species of *Plectocomiopsis*. *GBS*. **13**: 325–338.
1951. Palmae Malesicae XIII. The genus *Myrialepis*. *GBS*. **13**: 339–344.
1951. Palmae Malesicae XIV. The species of *Plectocomia* in Malaya. *GBS*. **13**: 345–350.
1951. Palmae Malesicae XV. The genus *Ceratolobus* in Malaya. *GBS*. **13**: 351–359.
1951. Palmae Malesicae XVI. The little-known Malayan genus *Calospatha*. *GBS*. **13**: 360–365.
1953. (Palmae Malesicae XVII). The genus *Daemonorops* in Malaya. *GBS*. **14**: 49–147.

1955. Palmae Malesicae XVIII. Two new Calamoid genera of Malaysia. *GBS*. **14**: 517–529.
1956. Palmae Malesicae XIX. The genus *Calamus* in the Malayan Peninsula. *GBS*. **15**: 32–265.
1959. Singapore's contribution to the study of palms. *GBS*. **17**: 195–198.
1960. The philological origin of *Areca* and *Catechu*. *Principes*. **4**: 26–31.
1963. Malayan ornamental palms. *Principes*. **7**: 31–32.
1964. The origin of the word “Cocos”. *GBS*. **20**: 295–312.
1964. On the etymology of the word *Cocos*. *Principes*. **8**: 107–112.
1967. Some notes on *Hyphaene*. *Garcia de Orta*. **15**(4): 427–460 + 19 plates.
1970. Some *Hyphaene* species from the Botanic Gardens, Calcutta. *Principes*. **14**: 117–123.
1970. The identify of *Hyphaene natalensis* Kuntze. *GBS*. **25**: 283–297.
1970. Asian species of *Hyphaene*. *GBS*. **25**: 299–309.
1970. A new search for *Hyphaene guineensis* Thonn. *GBS*. **25**: 311–334.

Appendix 2. C.X. Furtado's Palm Travels

Palms are difficult to interpret from herbarium specimens. Furtado made two major expeditions to study palms in the field during which he collected specimens that are deposited in the Singapore Botanic Gardens' Herbarium (SING).

In 1932, he joined the Clemens Expedition to Kinabalu and spent six weeks between March and April making a particular study of palms and aroids. He made extensive collections, which included several new species he subsequently described.

In 1937, he spent a month (20 May to 19 June) travelling down the west coast of Peninsular Malaysia collecting in Kedah, Perak, west Pahang and Negri Sembilan. He also made extensive collections from SW Johore.

In addition to studying palms in the field, he also traveled to see type specimens not available at SING. Taking half-pay for a year, from 17 April 1933 to 14 January 1934, he worked on the collections at the Berlin Botanic Gardens. It was here he came into contact with Professor M. Burret, the leading world specialist on palms at that time, and which explains why subsequently Furtado published several articles in *Feddes Repertorium*. He then proceeded to work in London from 16 January 1934. During this period, he also took the opportunity to visit the herbaria at Vienna, Florence and Paris. He resumed his duties at SING on 1 May 1934.

Another important visit was to the Bogor Botanic Gardens where he spent a month in 1936 (April and May) studying the living palm collection there, many of which had been named by O. Beccari, another great specialist on Malesian palms. He was able to make herbarium specimens of several of these, which are deposited at SING.

In the summer of 1967, Furtado went to Lisbon for health reasons. Ever a scientist, he kept himself busy by carrying out a herbarium study of the genus *Hyphaene*, with the result that his first publication on this genus appeared in *Garcia de Orta*.

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Appendix 3. A History of My Work on Palms

(extract from C.X. Furtado's DSc. dissertation)

When I came to Malaya in 1923, I began to study the biology of palms and aroids cultivated in the Botanic Gardens, Singapore; but I could not make much headway because the palms in this garden were badly named and the herbarium material of the cultivated palms was totally unworked. A difficulty of another nature arose from the fact that little of our material of wild or cultivated palms had been submitted to specialists working in Europe, nor was there in the Singapore herbarium any authentic material received by way of exchange from any other institutions.

Thus the only alternative left was to undertake systematic studies independently of any external help or advice, and at such odd periods as my duties of the Field Assistant would allow. This study obliged me not only to resuscitate my knowledge of Latin to the extent of being able to read general and old systematic accounts of palms, but also to learn Italian in order to read BECCARI's work, Spanish to read the early works published in Manila, French to read the accounts on palms from Indochina and others written in that language and German to enable me to consult systematic works in that language.

Not until I had made sufficient progress in these languages and systematic studies did I realize yet another difficulty which arose because of the lack of any material in the Singapore herbarium worked out by a specialist on palms. This last difficulty was particularly felt whenever I had reason to doubt the correctness of Mr. RIDLEY's interpretation of species, and also when the original descriptions were insufficient to guarantee a correct identification of the species concerned.

In this dilemma, the Singapore Government came to my rescue, after it was recognized that I had made sufficient progress in my studies in palms, aroids and languages. I was sent to Europe in 1933 with letters to several botanical institutions recommending them to give me facilities to study the types of palms in their care.

I chose the Berlin Botanic Gardens as my headquarters in Europe because Prof BURRET had promised to assemble there the types of MARTIUS (from the Munich herbarium) and because it would be easy to obtain there specimens I might require from most herbaria in Europe. Further, the Berlin herbarium has a large number of holotypes, haptotypes and neotypes of the Indo-Malaysian palms, nearly all the Indo-Malaysian material there had been worked out by BECCARI. Further I expected the cooperation of Prof BURRET in naming many of the American palms in the Singapore Gardens, on the systematics of which I had worked very

little, and to learn from him about the new concepts he had introduced in the classification of American palms. Also I hoped to improve my knowledge of the German language and to profit by the discussions with Prof BURRET who was the only palm specialist then known to the world.

During my study of the genus *Areca* and *Palmae Malesicae* III (Calami), the results of which were prepared mainly in Europe, I naturally profited much from the discussions with Prof BURRET on the subject of nomenclature, and still more so from similar discussions with Prof H. HARMS, also of Berlin, to whom I was introduced by Prof BURRET on the plea that he was the better qualified to solve my nomenclatural difficulties. And these discussions were specially valuable to me at the time because the International Rules of Botanical Nomenclature ed. 3, adopted at the International Botanical Congress, Cambridge, England, 1930, had not then been published. And no one was better able to discuss those Rules than Prof HARMS, editor-in-chief of edition 3 of the Rules.

That I have not slavishly followed the opinions on nomenclature, so kindly placed at my disposal in Berlin by the two professors named, may be gathered from my papers and, once the Rules were published in 1934, I commenced my own independent commentary upon them.